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(54) Title
**MULTI-FUNCTIONAL INNER EAR TREATMENT AND DIAGNOSTIC SYSTEM**

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(56) Prior Art Documents
**US 5304134**
**US 5219334**
**US 5281287**

(57) Claim

1. A treatment apparatus for delivering therapeutic agents into the inner ear of a human subject comprising:

a reservoir portion comprising an exterior wall and an internal cavity therein surrounded by said wall;

fluid transfer means within said wall of said reservoir portion for enabling passage of fluid materials through said wall; and

a tubular stem portion comprising an open first end, a second end, and a passageway extending continuously through said stem portion, said second end of said stem portion being connected to said reservoir portion sc that said passageway through said stem portion is in fluid communication with said internal cavity in said reservoir portion.

40. A treatment system for the inner ear of a human subject comprising:

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a primary treatment apparatus comprising:

a reservoir portion comprising an exterior wall and an internal cavity therein surrounded by said wall;

fluid transfer means within said wall of said reservoir portion for enabling passage of fluid materials through said wall;

a tubular primary stem portion comprising an open first end, a second end, and a passageway extending continuously through said primary stem portion, said second end of said primary stem portion being connected to said reservoir portion so that said passageway through said primary stem portion is in fluid communication with said internal cavity in said reservoir portion; and

electrical potential transmission means fixedly secured to said apparatus for transmitting electrical potentials into and out of said inner ear; and

an inflatable insert member positioned within said primary treatment apparatus comprising:

a fluid receiving portion comprising an exterior wall and an internal cavity therein; and

an elongate tubular portion comprising an open first end, a second end, and a passageway extending continuously through said tubular portion, said second end of said tubular portion being connected to said fluid receiving portion so that said passageway through said tubular portion is in fluid communication with said internal cavity in said fluid receiving portion, said fluid receiving portion of said insert member being positioned within said internal cavity of said reservoir portion of said primary treatment

apparatus, and said tubular portion of said insert member being positioned within said passageway through said primary stem portion of said primary treatment apparatus.

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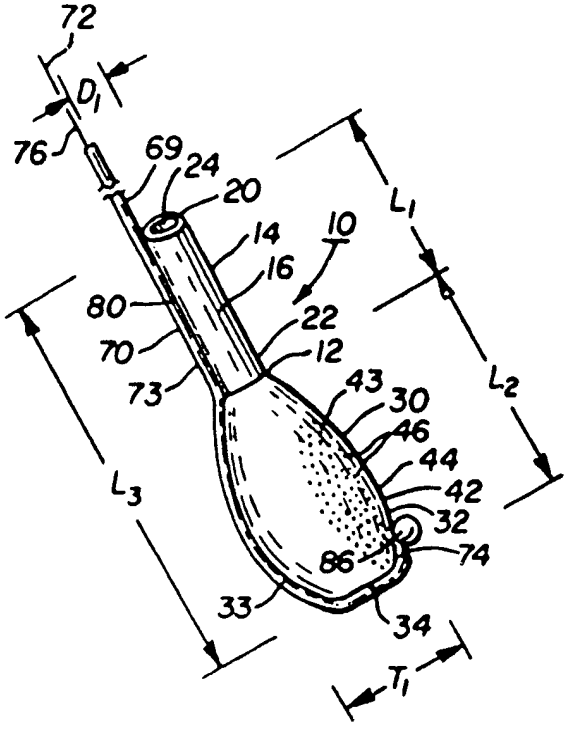
682308

(54) Title: MULTI-FUNCTIONAL INNER EAR TREATMENT AND DIAGNOSTIC SYSTEM

(57) Abstract

A therapeutic treatment apparatus (10) for use in the middle and inner ear. The apparatus (10) includes a tubular stem portion (14) attached to a medicine-retaining reservoir (30) with an internal cavity (38). The reservoir (30) includes multiple pores (46) therethrough or an opening (50) having a semipermeable membrane (54) therein which enables medicine delivery from the reservoir (30). Such delivery occurs when the reservoir (30) comes in contact with selected middle-inner ear interface tissues. A conductive member (70) for receiving electrical potentials from ear tissues is affixed to the apparatus (10). Alternatively, the apparatus (200) may include tubular first and second stem portions (204, 236) secured on opposite sides of a reservoir (220) along with a conductive member (270) attached thereto of the type indicated above.



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(54) Title
**OPIOID FORMULATIONS FOR TREATING PAIN**

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(57) *Claim*

1. A method of effectively treating pain in a human, the method comprising orally administering to the human on a once-a-day basis an oral sustained release dosage form containing an opioid analgesic or salt thereof which upon administration provides a time to maximum plasma concentration ($T_{max}$) of said opioid in about 2 to about 10 hours and a maximum plasma concentration ($C_{max}$) which is more than twice the plasma level of said opioid at about 24 hours after administration of the dosage form, and which dosage form provides effective treatment of pain for about 24 hours or more after administration to the human, said dosage form comprising inert beads coated with the opioid analgesic or salt thereof and overcoated with a sustained release coating.

2. The method of claim 1, wherein the $T_{max}$ occurs in about 2 to about 8 hours after oral administration of said dosage form.

3. The method of claim 1, wherein the $T_{max}$ occurs in about 3 to about 6.5 hours.

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(54) Title: OPIOID FORMULATIONS FOR TREATING PAIN

(57) Abstract

Patients are treated with 24-hour oral sustained release opioid formulations which, upon administration, provide an initially rapid opioid absorption such that the minimum effective analgesic concentration of the opioid is more quickly achieved. These sustained release opioid formulations include an effective amount of at least one retardant material to cause said opioid analgesic to be released at such a rate as to provide an analgesic effect after oral administration to a human patient for at least about 24 hours, and are characterized by providing an absorption half-life from 1 to about 8 hours. A method of titrating a human patient utilizing these sustained release opioid formulations is also disclosed.